

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

What is claimed is:

- 1 1. (Currently Amended) A computer-implemented method for accessing an instance of  
2 a recreatable object in a shorter-duration memory based on a reference to the instance  
3 of the recreatable object located in a longer-duration memory, wherein the shorter-  
4 duration memory is associated with a call, the method comprising the steps of:  
5 locating, within the shorter-duration memory, a context structure ~~associated with the~~  
6 call, wherein at least a portion of the context structure is passed as an  
7 argument to the call;  
8 locating an XREF pointers array based on data cached within the context structure,  
9 wherein the data cached within the context structure includes a reference  
10 to the XREF pointers array;  
11 determining whether the XREF pointers array includes a pointer associated with said  
12 reference to the instance of the recreatable object; and  
13 if the XREF pointers array includes a pointer associated with said reference to the  
14 instance of the recreatable object, then following said pointer to locate said  
15 instance within said shorter-duration memory.
  
- 1  
1 2. (Currently amended) The method of Claim 1 wherein the step of locating an XREF  
2 pointers array based on data cached within the context structure comprises the steps  
3 of:

4 determining a hash code associated with a memory page in which the reference to the  
5                   instance of the recreatable object located in the longer-duration memory is  
6                   located;  
7                   using at least a portion of the hash code as an index to locate an array entry within an  
8                   array stored within the context structure; and  
9                   if said array entry contains a pointer, then following said pointer stored in said array  
10                  entry to locate said XREF pointers array.

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1       3. (Original) The method of Claim 2 wherein:  
2                   the array is a power-of-two array; and  
3                   the portion of said hash code that is used as said index includes a particular number of  
4                   bits of said hash code.

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1       4. (Currently amended) The method of Claim 1 wherein, the XREF pointers array does  
2                   not include a pointer associated with said reference to the instance of the  
3                   recreatable object, -and the computer-implemented method further comprises  
4                   the steps of:

5                   creating said instance of the recreatable object by activating said recreatable object;  
6                   and  
7                   storing a pointer to said instance of the recreatable object in said XREF pointers  
8                   array.

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1       5. (Currently amended) The method of Claim 2 wherein: if said array entry does not  
2                   contain a pointer;-then

3 creating said instance **of the recreatable object** by activating said recreatable object;

4 and

5 storing a pointer to said instance **of the recreatable object** in said array entry.

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1 6. (Previously Presented) A computer implemented method for accessing an instance of  
2 a recreatable object in shorter-duration memory based on a reference located in a  
3 longer-duration memory, wherein the shorter-duration memory is associated with a  
4 call, the method comprising the steps of:

5 when a class is activated, generating, within said shorter-duration memory, a class  
6 object associated with the class;

7 storing, within said class object, data for locating instances of recreatable objects  
8 associated with said class, wherein said data includes a pointer to an XREF  
9 pointers array;

10 to dereference said reference located in a longer-duration memory, performing the  
11 steps of:

12 determining that said reference located in a longer-duration memory is  
13 associated with said class; and

14 using said data within said class object to locate said instance of said  
15 recreatable object.

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1 7. (Canceled).

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1 8. (Currently amended) The method of Claim 6 wherein the step of using said data  
2 within object to locate said instance includes the steps of:

3 determining whether the XREF pointers array includes a pointer associated with said  
4 reference; and  
5 if the XREF pointers array includes a pointer associated with said reference, then  
6 following said pointer to locate said instance within said shorter-duration  
7 memory.

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1 9. (Original) The method of Claim 8 wherein:  
2 the XREF pointers array does not include a pointer associated with said reference; and  
3 the method further comprises the steps of  
4 creating said instance by activating said recreatable object; and  
5 storing a pointer to said instance in said XREF pointers array.

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1 10. (Currently amended) A computer-readable medium carrying instructions for  
2 accessing an instance of a recreatable object in a shorter-duration memory based on a  
3 reference to the instance of the recreatable object located in a longer-duration  
4 memory, wherein the shorter-duration memory is associated with a call, the computer-  
5 readable medium comprising instructions for performing the steps of:  
6 locating, within the shorter-duration memory, a context structure associated with the  
7 call, wherein at least a portion of the context structure is passed as an  
8 argument to the call;  
9 locating an XREF pointers array based on data cached within the context structure,  
10 wherein the data cached within the context structure includes a reference  
11 to the XREF pointers array;

12 determining whether the XREF pointers array includes a pointer associated with said  
13 reference to the instance of the recreatable object; and  
14 if the XREF pointers array includes a pointer associated with said reference to the  
15 instance of the recreatable object, then following said pointer to locate said  
16 instance within said shorter-duration memory.

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1 11. (Previously Presented) The computer-readable medium of Claim 10 wherein the step  
2 of locating an XREF pointers array based on data cached within the context structure  
3 comprises the steps of:  
4 determining a hash code associated with a memory page in which the reference to the  
5 instance of the recreatable object located in the longer-duration memory is  
6 located;  
7 using at least a portion of the hash code as an index to locate an array entry within an  
8 array stored within the context structure; and  
9 if said array entry contains a pointer, then following said pointer stored in said array  
10 entry to locate said XREF pointers array.

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1 12. (Original) The computer-readable medium of Claim 11 wherein:  
2 the array is a power-of-two array; and  
3 the portion of said hash code that is used as said index includes a particular number of  
4 bits of said hash code.

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1 13. (Currently amended) The computer-readable medium of Claim 10 wherein: if the  
2 XREF pointers array does not include a pointer associated with said reference to the

3           instance of the recreatable object; and, the computer-readable medium further  
4           comprises instructions for performing the steps of:  
5           creating said instance of the recreatable object by activating said recreatable object;  
6           and  
7           storing a pointer to said instance of the recreatable object in said XREF pointers  
8           array.

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2       14. (Currently amended) The computer-readable medium of Claim 11 further comprising  
instructions for performing the steps of:  
3           if said array entry does not contain a pointer, then creating said instance of the  
4           recreatable object by activating said recreatable object; and  
5           storing a pointer to said instance of the recreatable object in said array entry.

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2       15. (Previously Presented) A computer-readable medium carrying instructions for  
accessing an instance of a recreatable object in shorter-duration memory based on a  
3           reference located in a longer-duration memory, wherein the shorter-duration memory  
4           is associated with a call, the computer-readable medium comprising instructions for  
5           performing the steps of:  
6           when a class is activated, generating, within said shorter-duration memory, a class  
7           object associated with the class;  
8           storing, within said class object, data for locating instances of recreatable objects  
9           associated with said class, wherein said data includes a pointer to an XREF  
10           pointers array;

11 to dereference said reference located in the longer-duration memory, performing the  
12 steps of:  
13 determining that said reference located in the longer-duration memory is  
14 associated with said class; and  
15 using said data within said class object to locate said instance of said  
16 recreatable object.

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1 16. (Canceled).

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1 17. (Currently amended) The computer-readable medium of Claim 15 wherein the step  
2 of using said data within object to locate said instance includes the steps of:  
3 determining whether the XREF pointers array includes a pointer associated with said  
4 reference; and  
5 if the XREF pointers array includes a pointer associated with said reference, then  
6 following said pointer to locate said instance within said shorter-duration  
7 memory.

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1 18. (Original) The computer-readable medium of Claim 17 wherein:  
2 the XREF pointers array does not include a pointer associated with said reference; and  
3 the computer-readable medium further comprises instructions for performing the  
4 steps of:  
5 creating said instance by activating said recreatable object; and  
6 storing a pointer to said instance in said XREF pointers array

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1       19. (Previously Presented) The method of Claim 1 wherein the duration of the  
2           shorter-duration memory is shorter than the duration of the longer-duration  
3           memory

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1       20. (Previously Presented) The computer-readable medium of claim 10  
2           wherein the duration of the shorter-duration memory is shorter than the  
3           duration of the longer-duration memory.